

# Waters column

*A Reprint from*

*Volume VI  
Issue 4, 1997*

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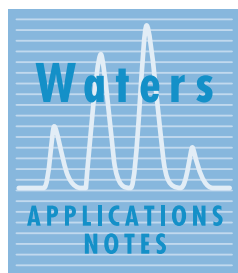
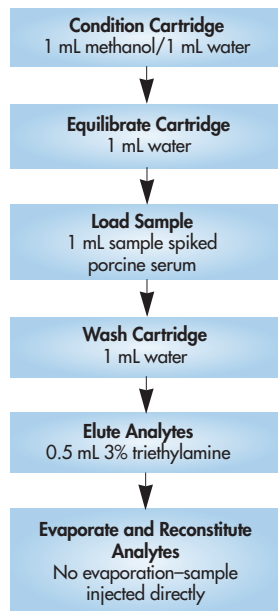
Published by Waters Corporation  
34 Maple Street  
Milford, MA 01757 USA  
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Fax: 508-872-1990

Editor: Uwe D. Neue, Ph.D.  
ISSN #1084-0540

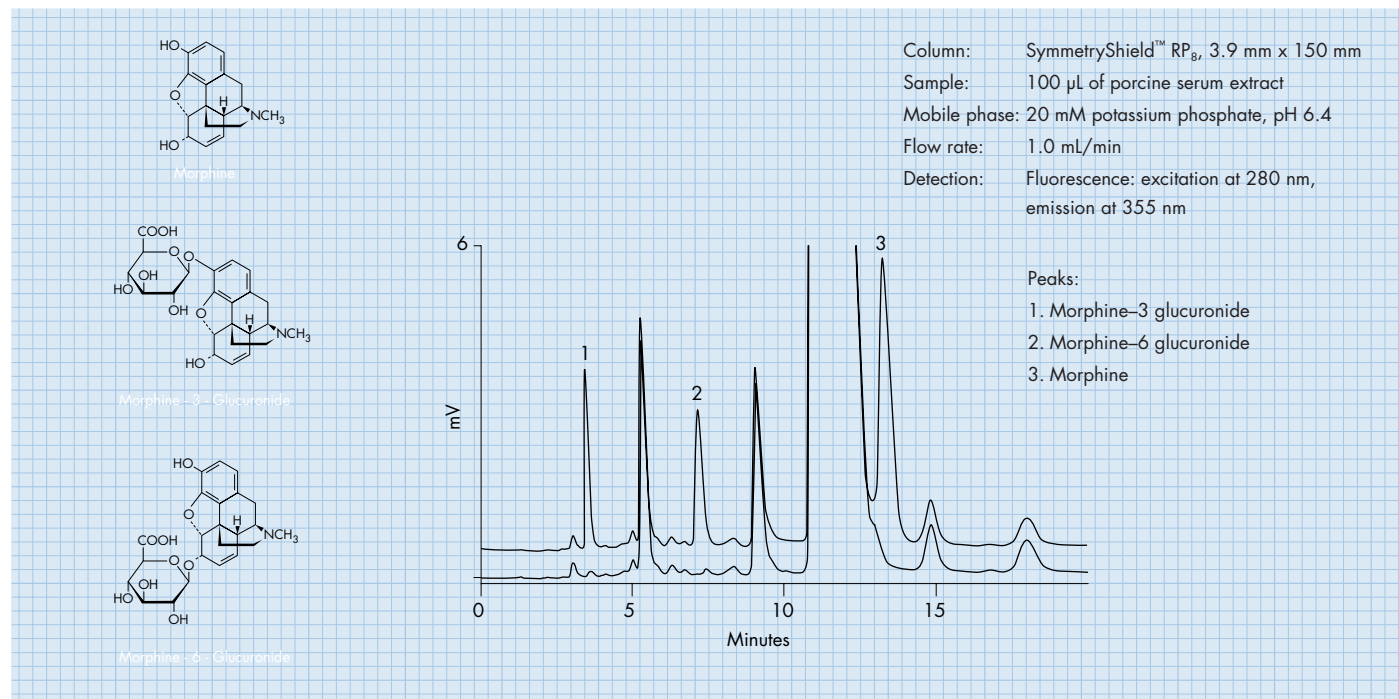
# Morphine and Its Metabolites

## Solid-Phase Extraction Procedure

Oasis™ HLB 1 cc Extraction Cartridge



## Chromatogram of Serum Extracts: A) Blank B) Spiked Sample



## System

A Waters 717plus Autosampler and a Waters 616 LC System. Detection was by fluorescence using a Waters Fluorescence Detector. Data acquisition was performed using a Waters Millennium® 2010 Chromatography Manager. A 20-position vacuum manifold with a vacuum pump was used to process solid-phase extraction.

## SPE Spiked Serum Results

Compound	Concentration µg/mL	% Recovery	% RSD (n=6)
M3G	0.48	90.7	2.0
	0.097	100	3.1
M6G	2.4	92.2	2.8
	0.49	93.1	2.5
Morphine	3.6	102	3.6
	0.73	102	3.2

## **Millennium® 2010 Chromatography Manager**

*Advanced computer technology simplifies accessing, interpreting, and reporting your results.*

The productivity of today's chromatography is centered around the ability to find, generate, summarise, and report results in a way that meets your needs and complies with any regulatory requirements. The Millennium® relational database lets you create your own view filters to customise the way you sort your information, such as "lotCode".

- Using the database, you can track a method history giving you audit trail capability that ensures total security of your raw data and results. In addition, you can specify "Access Type" which allows you to "lock" your methods for even greater security.
- The database keeps track of your instruments, triggering an alarm when scheduled maintenance is required. The Millennium® relational database lets you view the injection information on any calibration point at any particular point in time on a processing sequence. This gives you a detailed account of the processing method for that injection, ensuring an accurate audit trail for regulatory compliance.
- The Millennium® Chromatography Manager can provide acquisition and control for as many as four chromatographic systems, including three HP5890 GC systems.
- The Millennium® Report Publisher has the capability to give you exactly what you want.

## **Waters 717plus Autosampler**

The Waters 717plus Autosampler combines reliability, versatility and low cost of ownership into a fully automated, all-electric, easy-to-use instrument that will meet and exceed your requirements. The 717plus Autosampler incorporates a highly reliable and extremely precise fluid path design that is versatile enough to use for all your methods and applications. Advanced automation capabilities make it easy to develop methods using automated derivatisation techniques or to automatically add reference standards or diluents. The optional Heating/Cooling module allows you to work with a wide range of samples, from heat labile biological samples to viscous polymer samples, with exceptional precision and reliability.

## **Waters 616 LC System**

Waters has incorporated the latest technological advances into the new Waters 616 LC system. The 616 is the culmination of leading innovative technology—fluidic, electronic, and software—designed to deliver superior performance in a premier pumping system. The 616 offers pulse-free flow, low delay volume, efficient gradient mixing, precision, accuracy, and reliability.

## **Waters Fluorescence Detector**

Fluorescence detection offers both greater sensitivity and selectivity for compounds that fluoresce naturally, or can react reproducibly with reagents to form stable fluorescent compounds. Waters Scanning Fluorescence Detector enables you to easily apply this technology with unbeatable performance and versatility. A dual monochromator design provides independent programming of both excitation and emission wavelengths to improve individual analyte detectability. The Waters Fluorescence Detector offers the sensitivity you need for applications where very low concentrations of targeted compounds are analysed.



The quality management system of Waters manufacturing facility, Millford, Massachusetts, complies with the International Standard ISO 9001 Quality Management and Quality Assurance Standards. Waters quality management system is periodically audited by the registering body to ensure compliance.